# PART I

**Summary of facts on which the proposals are based.**

## CHAPTER I.

### DESCRIPTION OF THE TRACT DEALT WITH.

#### 1.—*Name and situation.*

4. The Sukkur Forest Division, to which these proposals extend, embraces the forests in the Sukkur and the Upper Sind Frontier districts, and is the northern-most division in the Sind Forest Circle and the Province of Sind. The two districts spread over to the east and west, but the main forest tract follows the course of the river Indus from north to south and has two diverging lines from Sukkur on the south extending in the direction of the North-Western Railway to Reti and Jacobabad on the Multan and Sibi routes, respectively.

5. Its area of 269,267 acres 36 guntas or 42·72 square miles constitutes it the largest Forest division in the Sind Circle, being equal in fact to the combined areas of any two of the other three divisions in the circle. The forests stand on the banks of the river and on the tract of the railway not regularly and contiguously, but in disconnected strips or patches of land varying in area rom 17,867 acres to 396 acres.

6. Sukkur, Rohri, Shikarpur and Jacobabad are important towns in the area dealt with. The first is the civil and railway head-quarters of the district of the same name, and forms a large municipality with Rohri on the opposite bank of the River Indus. It is also the chief fuel station for the produce of the forests. The last is a native cavalry cantonment and the civil station the Upper Sind Frontier district. Shikarpur is rapidly decaying now, but former days was a large commercial centre for local manufactures and merchdise from Central Asia. Until quite recently, it gave its name to and was civil head-quarters of the district now called after Sukkur.

These chief towns are connected by roads passing on to Kelat and Quetta from Shikarpur and Jacobabad; and a grand trunk road from Rohri leads out to Multan between the railway and the left bank of the river linking up the taluka towns of Pano Akil, Ghotki, Mirpur Mathelo and Ubauro on the way.

#### 2.—*Configuration of the ground.*

7. This differs in no respect from that to be seen in the other forest divisions in Sind, except that at Sukkur and Rohri the general unvaried evenness of the landscape is broken by massive outcrops of nummulitic limestone with underlying shales and sandstone which protrude through, and stand as isolated ridges in the alluvium. Here the river is confined to fixed banks and flows in two streams leaving Bukkur an island in the centre. At this part the road and the railway from Sukkur to Rohri cross the river over the Lansdowne bridge, and a gauge is set up to take readings of the height to which river rises when in flood.

8. The country has a gentle fall in the direction indicated by the flow of the river, and numerous undulations and depressions mark the changes made by the river in its course from time to time. The more recent results of these changes known as *paran or dhand* continue to receive water in their channels in the hot weather and become useful for irrigating the forests and carrying out the produce to the river.

9. The divisions of the alluvium into high and low considered in previous reports may be likewise considered here. High alluvium is that which has either ceased to come under water from the river or continues to do so only in abnormal floods, and constitutes the dry forests growing *kandi* as the principal crop. Low alluvium is that which being nearer to the river receives

water in ordinary years and is covered with good crops of babul, *bahan* and *lai*. *Kacha* are new lands thrown up by the river and may be rightly considered apart as being next to the river and submerged for several feet every year until their surface level is raised by successive deposits of silt: they then become covered with first crops of *lai* and *kanh* grass.

10. The divisions of the alluvium with reference to the yearly inundation may be thus summarised :—

(*a*) Very high land which is never flooded ;

(*b*) High land which is reached by abnormal floods ;

(*c*) Low land which is flooded yearly ; and

(*d*) Very low land (*kacha*) which is submerged for several feet.

### 3.—*Underlying rock and soil.*

11. The soil consists of the alluvium of the river which is annually brought down from the hills, and the prevailing composition of this alluvium is sand and clay more or less. The proportion of these elements vary in different forests and in different parts of the same forest, but the following broad types may be distinguished according to the relative proportion of the two ingredients contained in the soil :—

(*a*) A dry micaceous sand with a small proportion of clay. This type is to be met with in both high and low alluvium, often overlaid by a thin layer of better soil. In elevated tracts beyond the reach of the overflow of the river it is incapable of supporting any but desert vegetation. In the blanks created drift-sand is accumulated covering the surface at first in a top-dressing several inches deep, and ultimately in dunes several feet high. In low alluvium its presence is early indicated by the disappearance of *kanh* grass from the area after a single season's failure of the river to inundate.

(*b*) A loamy sand, containing a variable proportion of clay. It consists of a mixture of sand and clay in which the latter usually occupies less than half the volume. This type predominates over a large proportion of the area dealt with, and is capable under yearly irrigation of supporting good tree growth. Given up wholly by the river it is sufficient to sustain *kandi* for several years before becoming exhausted. *Lai*, as a low bushy scrub, continues to stand on it so long as sub-soil moisture passes to the surface.

(*c*) A sandy loam containing a fair proportion of clay. This type prevails in shallow depressions and silting dhands and often on banks of low alluvium. It may be even seen overlying a bed of type (*a*). It forms a moist free soil, and when of sufficient depth develops excellent forest growth.

12 *Kacha* or low unstable alluvium is nearly always composed of pure micaceous sand, or of a fine silt forming quicksands, locally known as "chor-gup."

13. The sub-soil is represented by the same broad types as in the surface soil. The different types alternate in layers of varying depth, a layer of sand being often interposed between two layers of other types. Water is found at a depth from the surface varying from 5 to 25 feet, *kalar*, known in other parts of India as *usar* and *reh*, is present in the surface soil of dry forests, and is an indication of the deterioration of the soil due to lack of surface irrigation.

### 4.—*Climate.*

14. The climate is characterised by its excessive dryness, by a great difference of temperatures at different seasons of the year and by a scanty rainfall. Upper Sind has two well marked seasons in the year, *viz.*, the hot season and the cold season, or summer and winter, respectively. The former extends from May to October and the latter occupies the other months of the

year. Some portions of each of these two periods at the beginning and the end, varying from a month to six weeks, may be called temperate, representing a period of change, but afterwards the weather rapidly wears on in intensity and in the course of another month or so the extreme of the season is reached.

15. January is the coldest and June the hottest month in the year, and between these two months the thermometer has a wide range of from 87° to 97° Fahrenheit. In the winter the temperature goes down to 27° or 28° Fahrenheit and in the summer it rises to anything from 115° and 125° Fahrenheit in the shade, and even a shade temperature of 129° is not unknown at Jacobabad which is said to be the hottest place in India.

16. Frost is particularly injurious to young babul when there is no overhead cover. Yearlings are often killed outright and older plants are badly nipped down to the ground to re-shoot in the following hot weather. *Kandi* is similarly affected when frost is very severe and several species of desert vegetation are as nearly sensitive to frost as young babul. The *kachas* are the natural nurseries of babul in Sind; the overhead cover of *lai* shelters the young plant from the cold and draws it up towards light and air.

17. The following is a statement of the average rainfall recorded at places in the area under report during the 10 years ending 1902 :—

| | Inches. |
|---|---|
| Jacobabad ... ... ... | 2·90 |
| Shikarpur ... ... | 3·14 |
| Sukkur ... ... | 2·77 |
| Rohri ... ... ... | 2·51 |
| Ghotki ... ... ... | 3·12 |
| Ubauro ... ... | 3·02 |
| Kashmor ... ... | 2·47 |

Much of this rainfall is received in the winter months; December January being specially wet months in some years.

18. The forests depend for irrigation on the lateral overflow of the river. The latter begins to rise in March, and by June the water is high enough to fill canals and dhands and to overflow low alluvial banks. The river continues to rise until August when it is at its maximum. At this time with the Bukkur gauge reading standing at between 14′ and 15′ most of the forests on the banks of the river come under water. 16 feet represents high flood and the beneficial effect of the overflow is far reaching, extending on the left bank of the river to portions of the dry forests on the railway. Appendix G is a statement of the Bukkur gauge readings for 22 years ending 1902. It will be seen that 1882 and 1897 were years in which the highest readings were recorded The right bank of the river has the Sukkur-Kashmor Bund extending along its length the whole way and cutting off river water from lands on its protected side, except for a few flood-ways opened to forests bordering on its alignment. In the days before the bund the whole country from the bank of the river up to Jacobabad, Shikarpur and away southwards used to be regularly flooded and forests were dense and thriving, whereas now forests, such as there are between Shikarpur and Jacobabad, are not worthy of the name.

19. The climate is said to be healthy on the whole in spite of the wide range of the thermometer. The prevailing winds are northerly and north-easterly in the winter, and southerly and south-westerly in the summer.

### 5.—*Agricultural customs and wants of the surrounding population.*

20. These are very similar to those obtaining elsewhere in Sind. Two crops are grown yearly; kharif, consisting of millets and rice, the latter chiefly in Shikarpur and Jacobabad talukas; and rabi comprising wheat, barley, simko, matar (*lathyrus sativus*), jambo (*eruca sativa*) and sariya. Gram is grown in Shikarpur and Jacobabad as a cold weather crop, and cotton in a few places usually biennially.

21. The people of the surrounding villages, Muhammadans and Hindus, depend on the forests only to a limited extent for fuel and grazing and small wood for building and agricultural purpose. Those most dependent on the forests are the maldars or professional cattle breeders who are permitted to squat in the forests on payment of grazing fees for their cattle. * Appendix J is a compilation of the orders regulating grazing and the conduct of maldars squatting in the forest. Forest cultivation is done to some extent, assessment being charged at the prevailing rates of ordinary Government land in the same taluka.

## CHAPTER II.

### THE COMPOSITION AND CONDITION OF THE FOREST.

#### 1.—*Distribution and area.*

22. Nearly in every case the forests form independent blocks, and the total forest area is made up of 65 of these blocks distributed for the most part on and near the banks of the river; the others, constituting the dry forest, lying along the two sections of the railway running through the district. The following shows the distribution of the area according to ranges:—

| No. | Range. | Acres. | guntas. |
|---|---|---|---|
| 1 | Kot Sultan | 22,670 | 12 |
| 2 | Sukkur | 27,316 | 36 |
| 3 | Abad | 43,060 | 12 |
| 4 | Kashmor | 26,717 | 8 |
| 5 | Mirpur | 44,736 | 4 |
| 6 | Ghotki | 30,953 | 0 |
| 7 | Sadhuja | 73,814 | 4 |
| | TOTAL | 269,267 | 36 |

or 42·72 square miles.

23. With the exception of the first range which is made up of the forests situated along the railway between Shikarpur and Jacobabad, the other ranges are constituted of the river side forests with addition in the case of the last three ranges of the dry forests on the Rohri-Multan section of the North-Western Railway. The second, third and fourth ranges are on the right bank of the river in the order given from south northwards, and the last three ranges on the left bank of the river from north southwards.

24. The maps available are the deh or village maps of the revenue survey settlement on a scale of 8 inches to a mile; and the riverain survey sheet maps on a scale of one mile to an inch. The latter, however, are not complete for all the forests in the division.

25. The old forest maps which were in use were at fault in most cases, and did not agree with the deh maps prepared under the latest revision survey settlement. Much time and attention had, therefore, to be given to the elaboration of correct maps by actual survey and by correcting the boundaries where wrong so as to make them coincide with the deh maps. Fresh forest maps have been prepared on a scale of 4 inches to a mile, and the acreages of the forests have been scaled off the corrected maps by means of the planimeter. The forests are named from the dehs in which they are situated. Appendix A. gives details of the forests showing changes brought about by erosion, accretion and disforestment since they were reserved.

#### 2.—*State of the boundaries.*

26. The forests are demarcated by lines cleared on the ground and by mounds of earth raised breast high, with a basal diameter of 7 ft. and having poles planted in the centre. Sometimes the mounds are surrounded by a

* Not printed.